SECTION 210 - LATEX MODIFIED SLURRY SEAL

1. GENERAL

The work shall consist of the application of latex modified slurry seal material to an existing street surface. The modified slurry seal shall be a mixture of emulsified asphalt, mineral aggregate, mineral filler, water, other additives, and a latex modifier properly proportioned, mixed and spread on the street surface in accordance with this specification and as directed by the Engineer.

2. MATERIALS

A. Emulsified Asphalt. The emulsified asphalt shall be CSS-1H(cationic). It shall show no separation after thorough mixing and shall conform to the requirement of the Standard Specifications of Kansas Department of Transportation for "Emulsified Asphalt, CSS-1H," Section 1202.

B. Mineral Aggregate. The mineral aggregate shall be chat aggregate which is a by-product of the milling of lead and zinc ores, and shall conform to the following grading requirements:

Retained on No. 3/8" sieve	0 - 2%
No. 4 sieve	6 -18%
No. 8 sieve	35 - 55%
No. 16 sieve	54 - 75%
No. 30 sieve	65 - 85%
No. 50 sieve	75 - 90%
No. 200 sieve	85 - 95%

The aggregate shall conform in all other respects to the requirement of the Standard Specification of Kansas Department of Transportation for "Aggregate for Slurry Seal," Section 1109.

D. Mineral Filler. The mineral filler shall be a recognized brand of Portland Cement that is free from lumps. It may be accepted upon visual inspection.

E. Water. The water shall be potable and shall be free of harmful soluble salts.

F. Latex Modifier. A latex based modifier, "Dynatex Latex" as distributed by Guthrie Industries, Inc. or other approved equal, shall be added to the asphalt emulsion. This additive allows the slurry seal mixture to be able to be cured sufficiently so that normal traffic can be allowed within one hour's time, without damage to the seal.

G. Other Additives. These additives are any other materials that are added to the slurry mixture or any of the component materials to provide the specified properties. The emulsifier, "Peral No. 417" as manufactured by Raschig GMBH, is the only other additive currently approved for this project. (See paragraph 45, entitled "Alternates," of the General Clauses.)

3. PROPORTIONING

The Engineer shall approve the design mix and all slurry seal materials and methods prior to use and shall designate the proportions to be used within the following limits:

Aggregate for Slurry Seal	20.0 lbs. (Type "A") to 25.0 lbs. (Type "B") per sq. yd. min. (dry wt.)
Emulsified Asphalt, CSS-1H	6-1/2% to 8-1/2% by wt. of aggregate(dry)
Mineral Filler	1.5% to 2.5% by wt. of aggregate (dry)
Latex Based Modifier	As needed to provide the specified properties
Water	As needed to provide proper consistency

The mineral aggregate shall be weighed by means of scale approved by the Engineer. Emulsified asphalt shall be weighed by means of approved scales or may be measured by volume, and converted to weight of emulsified asphalt.

A minimum of 2.5 percent modifier content certified from an approved source along with special emulsifiers shall be milled into the asphalt emulsion by an approved emulsion manufacturer.

4. CONSTRUCTION DETAILS

A. Mixing. The material shall be mixed by a self-propelled slurry seal coat mixing machine which shall be a continuous flow mixing unit able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral filler and water to a revolving multi-blade mixer and discharge the thoroughly mixed product on a continuous flow basis. The machine shall have sufficient storage capacity for aggregate, emulsified asphalt, mineral filler and water to maintain an adequate supply to the proportioning controls. The machine shall be equipped with self-loading devices that provide for the loading of all materials while continuing to lay slurry, thereby eliminating unnecessary construction joints and must be operated in this continuous manner.

Individual volume or weight controls for proportioning each material to be added to the mix shall be provided. Each material control device shall be calibrated and properly marked.

The aggregate feed to the mixer shall be equipped with a revolution counter or similar device so the amount of aggregate used may be determined at any time.

The emulsion pump shall be the positive displacement type and shall be equipped with a revolution counter or similar device so that the amount of emulsion used may be determined at any time.

The mixing machine shall be equipped with a water pressure system and nozzle type spray bar to provide a water spray immediately ahead of and outside the produce discharge opening in the pugmill mixer.

The mixing machine shall be equipped with an approved fines feeder that shall provide a uniform, positive, accurately metered, predetermined amount of the specified mineral filler at the same time and location that the aggregate is fed.

The mixing machine shall be equipped with opposite side driving stations to optimize longitudinal alignment. The machine shall be equipped to allow the operator to have full control of the forward and reverse speed during application of the latex modified slurry seal.

B. Spreading. The slurry mixture shall be spread uniformly by means of a mechanical type squeeze box, equipped with augers to spread the materials uniformly throughout the box. Flexible seals shall be in contact with the road to prevent loss of mixture from the box. The rear flexible seal shall act as a strike off and shall be adjustable. The spreader shall be maintained to prevent loss of the slurry product in sealing super-elevated curves. The mixture shall be spread to fill all cracks and potholes and leave a uniform non-skid film of fine aggregate and asphalt on the surface.

The seam, where two spreads join, shall be neat appearing and uniform. If in the opinion of the Engineer the seam is rough enough to cause a noticeable effect on steering of an automobile or affect the drainage of stormwater, the seam shall be removed and a new slurry seal applied.

All excess material that overruns in gutters shall be removed or squeezed back onto the surface and burlap mopped as directed by the Engineer.

All drag material shall be changed as directed by the Engineer to prevent streaks or slick spots. No streaks or slick spots shall be left in the uncured pavement surfacing.

All excess material shall be removed from ends of each job site immediately.

When needed, all joints, radius, ends and returns will be squeegee and burlap mopped as directed by the Engineer.

All discolored curbs and sidewalks shall be cleaned and flushed immediately before material sets up and all material tracked or lost past ends of job site shall be cleaned up before sealing crew leaves for next location.

C. Weather Limitations. The material shall spread only when the atmospheric temperature is at least fifty (50) degrees F. and rising and the weather is not foggy or rainy.

D. Seasonal Limitations. Slurry seal for bridge decks shall not be constructed after September 15, without written approval of the Engineer.

E. Surface Preparation. The area to be sealed shall be thoroughly cleaned, by power brooming, of all vegetation, loose aggregate and soil. The area to be sealed shall also be cleaned with either a blower or suction type sweeper immediately prior to sealing. Water used in pre-wetting the surface shall be applied at a rate to dampen the entire surface without any free flowing water ahead of the spreader box.

5. SCALE OPERATIONS

The Contractor shall provide and furnish a scale operator(s) to operate the necessary scales in weighing all materials required to be weighed, complete and sign the required material scale receipts and perform required documentation as may be required. A Performance Bond (with surety) in the amount of ten-thousand dollars payable to the City of Salina shall be executed by the Contractor, as principal, employees (scale operators) and an Insurance Company, as surety. The Insurance Company shall be authorized by the Kansas Commissioner of Insurance to do business in Kansas. The Contractor shall furnish a copy of the above noted bond to the Engineer prior to beginning work on the project. Performance Bond Forms may be obtained from the Engineer.

Bonds so furnished will be effective for the life of the contract. The Owner may release the bonding medium from responsibility upon completion and acceptance of the work.

The following general instructions shall be adhered to be the scale operator(s) and other applicable inspector personnel:

A. Each scale receipt ticket shall be made out in triplicate by the bonded scale operator at the scales. The original and first carbon shall be handed to the truck driver who shall in turn hand the original copy to the inspector at the time of unloading the material on the project. The inspector shall sign or initial the original upon receipt of the materials.

B. The Inspector shall also acknowledge delivery of the material by placing his name or initials on the first carbon copy, which is to remain in possession of the truck driver or Contractor.

C. The second carbon shall be left in the scale receipt book. When a book has been completed, or at times designated by the Engineer, the book shall be given to the Engineer. If it is found that some of the material was not delivered on the project, such notation shall be made on the tickets for the material.

D. The original copies of the tickets shall be used to determine quantities of material for which the Contractor shall be paid.

E. The second carbon copy in the book shall become the property of the Owner when the project has been completed.

F. A Company approved by the State of Kansas shall calibrate Scales. The frequency of calibration, or checking, by the approved company shall be as follows:

1. Beginning of the project.
2. When scales have been repaired.
3. When deemed necessary by the Engineer.

G. Zero balancing of scales shall be made every day before work starts and at random the rest of the day with a minimum of two per day and recorded as directed by the Engineer.

H. The Inspector will indoctrinate scale operators in proper documentation procedures.

6. MAINTENANCE OF TRAFFIC

Closing of streets for this work shall be at the direction of the Engineer and coordinated to result in the least practicable delay and inconvenience to traffic. Unless otherwise directed, all roads shall have one lane of traffic open in each direction at all times. The lanes being sealed shall be closed and guarded till cured out and open to traffic. Sufficient flagmen, warning signs and barricades shall be provided by the Contractor to properly control traffic and to prevent traffic from traveling in the freshly applied materials. Barricades and barricading, signs and other warning devices will be in accordance with the Federal Highway Administration "Manual on Uniform Traffic Control Devices" provisions for "Traffic Controls for Street and Highway Construction and Maintenance Operations."

7. CURING

Adequate means shall be provided to protect the slurry seal from damage by traffic until the mixture has cured sufficiently so that it will not adhere to or be picked up by the tires of vehicles. The Contractor shall provide signs, barricades and flagmen necessary to control traffic around the area under construction. The Contractor at the Contractor's expense shall repair any damage done by traffic to the slurry seal.

8. METHOD OF TESTS

The following tests shall conform to the 1990 Edition of the "Standard Specifications" for State Road and Bridge Construction as published by the Kansas Department of Transportation.

A. Aggregate:

Moisture Tests - - - - - - - - - - Section 1116 "Standard Specifications"
*Sieve Analysis- - - - - - - - - - Section 1116 "Standard Specifications"
*Material Passing No. 200 Sieve- - Section 1116 "Standard Specifications"
*The sample after removal of the minus 200 mesh material by washing shall be dry screened through a nest of sieves including the No. 200 mesh to determine conformance with the grading requirements of this specification. The percentage of the original sample retained on the No. 200 mesh sieve after both wash and dry screening shall be the percentage "Retained on the No. 200 Sieve" referred to in this specification.

B. Emulsified Asphalt:

Section 1204 "Standard Specifications"